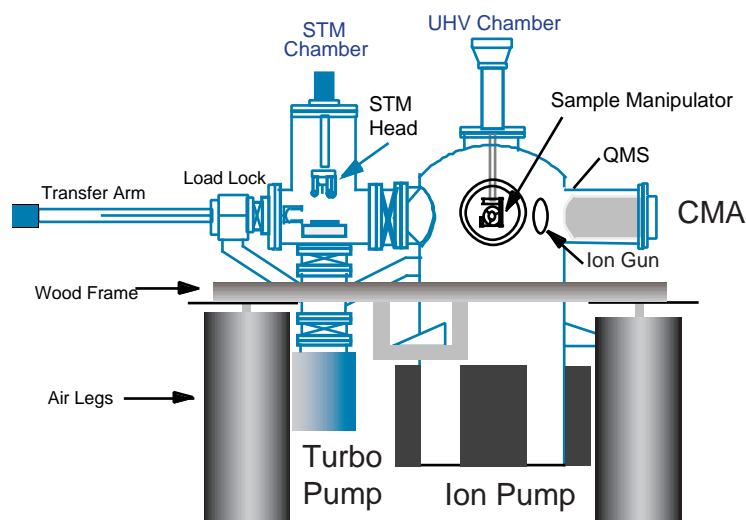


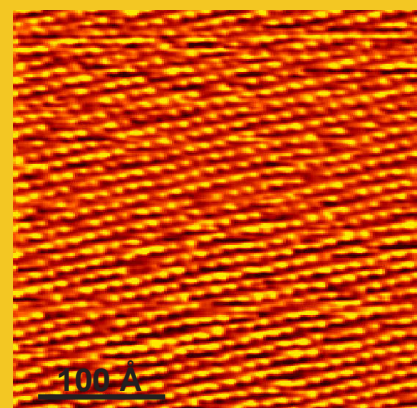


High Pressure, High Temperature Scanning Tunneling Microscope Developed

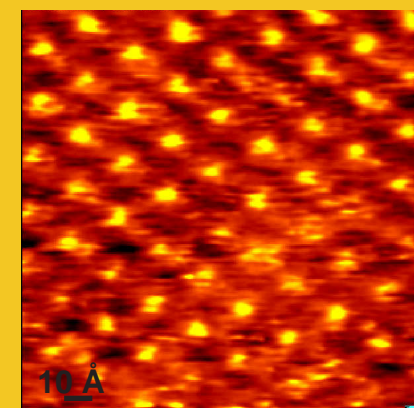
*Berkeley Lab Instrument Shows Promise for In-Situ Studies of
Catalytic Surfaces under Reaction Conditions*



Clean single crystal metal samples are prepared in the UHV chamber (right) and transferred to the STM chamber (left) for atomic-scale imaging. A gate valve separates the two chambers. Samples can be heated to 700 K and exposed to gas pressures up to 1.5 atmospheres in the STM chamber. The entire instrument rests on a cushion of air to reduce vibrations.



560x380Å



100x100Å

Low resolution (left) and high resolution (right) images of clean Pt (111) exposed to 150 Torr CO and 50 Torr O₂. The pattern of bright spots with 12.6 Å period ("Moiré pattern") appeared after the surface was annealed at 456 K. It is caused by the interference of a single layer of CO with a 3.6 Å period and the underlying structure of the Pt (111) surface, which has a 2.77 Å period.

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